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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/817,622	03/26/2001	Anwar Chitayat	99AN122-E	8382

7590

05/23/2002

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EXAMINER

MULLINS, BURTON S

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 05/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/817,622

Applicant(s)

CHITAYAT ET AL.

Examiner

Burton S. Mullins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

## DETAILED ACTION

### *Specification*

1. The first paragraph of the specification ("Related Applications") should be amended to refer to the parent of Ser.No. 08/668,705, now U.S.Pat.No. 6,137,195, i.e., that this application was based on provisional application Ser. No. 60/015,705 filed Mar. 28, 1996 and a continuation-in-part of U.S. Application Ser.No. 08/481,239, filed Jun. 6, 1995 which is now abandoned.

### *Claim Objections*

2. Claim 11 is objected to because of the following informalities: On line 11, after "interacts" insert ---with---. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2, 4, 7-10 and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kemmer (US 4,234,831) in view of Spinner et al. (US 5,771,174).

Kemmer teaches an integrated rotary-linear actuator system, comprising: a plunger (rotor 3) movable along and rotatable about a longitudinal axis extending through the plunger (and shaft

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6); a coil system having coils S1-S8 arranged to, when energized, interact with the plunger to move the plunger in at least one of a rotational mode and in a linear mode (abstract); an amplifier (part of inverter with outputs A1-A8; Fig.4) coupled to the coils and operative to provide electrical energy to energize the coils; and a control system coupled with the amplifier (converter/decoder with input; Fig.4). Kemmer does not teach a network interface operative to receive control information from the actuator.

Spinner teaches a distributed intelligence control system for controlling plural actuators 26 (Fig.2) and respective controllers 30 connected by connections 32 with a network bus 24 and gateway or "network interface" 22 (Fig.1). The network interface interprets messages from the supervisory control system (computer) 20 and converts and distributes this information to the actuator controllers. The network interface also converts and transmits information originating from the actuator, e.g., position and status, to the control system (c.4, lines 23-30). Spinner's control system selectively energizes the coils to effect desired movement of the plunger based on the control information received via the network interface (c.7, line 9-c.8, line 34).

It would have been obvious to one of ordinary skill at the time of the invention to modify Kemmer and provide a network interface per Spinner since this would have been desirable to control the actuators.

Regarding claims 2 and 16, though Kemmer teaches only one magnet or "motor", duplication of parts of an invention, i.e., providing an "array of magnets" such that plural motors are provided, has been held to involve ordinary skill. *St. Regis Paper Co. v. Bemis Co.* 193 USPQ 8, (7<sup>th</sup> Cir.1977).

Regarding claim 4, the motor support (tube 7) in Kemmer comprises a bearing support and a housing that define a well operative to receive the plunger (rotor 3), the plunger being supported by bearings 4 located between the plunger and the bearing support, such that the plunger is axially movable along the longitudinal axis between a retracted position and an extended position and rotatable about the longitudinal axis (Fig.1).

Regarding claims 9-10, the actuator controllers in Spinner comprise "sensors" since they transmit actuator information, e.g., position and status, to the host control system. The host includes program data operative to program operating characteristics of at least part of the integrated rotary-linear actuator system based on evaluation of the condition data from the integrated rotary-linear actuator system (c.7, line 9-c.8, line 34).

Regarding claim 17, Spinner includes a method for controlling plural actuators including a network interface to enable communication over an associated network, the method comprising: receiving control information (from host 20) at the network interface of the integrated rotary-linear actuator system via the associated network; and programming operating parameters of the rotary-linear actuator system based on the received control information (various parameters of the control algorithm are shown in c.6, lines 44+).

Regarding claim 18, the communications interface of Spinner including a network interface card (c.5, lines 1-28) would use a network protocol. Regarding claim 19, the control information includes program data, the operating parameters of the rotary-linear actuator system being programmed based on the program data (c.6, lines 5+). Regarding claim 20, Spinner's system senses conditions, e.g. position and state, of the actuators and provides a sensor signal indicative of the sensed at least one condition, which is sent from the actuator to

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the computer 20 via the network interface 22 using the network protocol. Regarding claim 21, the control information includes program data (algorithm parameters given in c.6, line 44+) to program the operating parameters of at least part of the actuator based on evaluation of the condition data sent from the actuator.

5. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sudo et al. (US 4,644,205) in view of Spinner et al. (US 5,771,174). Sudo teaches a rotary-linear actuator system, comprising: a motor support (stationary member 12) having a well (Fig.2); a plunger (floating member 14) supported for movement in at least part of the well so as to enable axial movement of the plunger relative to the well along a longitudinal axis of the plunger and rotational movement of the plunger about the longitudinal axis; an array of magnets (34a-34d/36a-36d) associated with the plunger (Fig.2); a first set of coils 42/44 (Fig.2) arranged to, when energized, apply an electric field that interacts with the array of magnets and provides an axial force to drive the plunger element in a linear mode (c.3, line 32); a second set of coils 50a-50h (Fig.2) arranged to, when energized, apply an electric field that interacts with the array of magnets and provides a tangential force to drive the plunger element in a rotational mode (c.3, line 47); and an integrated control system 66 which selectively energizes the first and second sets of coils to effect movement of the plunger in at least one of the linear and rotational modes.

Sudo does not have a network interface operative to receive control information via an associated network.

Spinner teaches a distributed intelligence control system for controlling plural actuators 26 (Fig.2) and respective controllers 30 connected by connections 32 with a network bus 24

and gateway or "network interface" 22 (Fig.1). The network interface interprets messages from the supervisory control system (computer) 20 and converts and distributes this information to the actuator controllers. The network interface also converts and transmits information originating from the actuator, e.g., position and status, to the control system (c.4, lines 23-30). Spinner's control system selectively energizes the coils to effect desired movement of the plunger based on the control information received via the network interface (c.7, line 9-c.8, line 34).

It would have been obvious to one of ordinary skill at the time of the invention to modify Sudo and provide a network interface per Spinner since this would have been desirable to control the actuators.

Regarding claim 12, the communications interface of Spinner including a network interface card (c.5, lines 1-28) would use a network protocol. Regarding claim 13, the control information includes program data, the operating parameters of the rotary-linear actuator system being programmed based on the program data (c.6, lines 5+). Regarding claim 14, Spinner's system senses conditions, e.g. position and state, of the actuators and provides a sensor signal indicative of the sensed at least one condition, which is sent from the actuator to the computer 20 via the network interface 22 using the network protocol. Regarding claim 15, the control information includes program data (algorithm parameters given in c.6, line 44+) to program the operating parameters of at least part of the actuator based on evaluation of the condition data sent from the actuator.

6. Claims 1-10 and 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sudo et al. (US 4,644,205) in view of Spinner et al. (US 5,771,174) and Gerard (US

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4,751,4347). Sudo teaches a rotary-linear actuator system, comprising: a motor support (stationary member 12) having a well (Fig.2); a plunger (floating member 14) supported for movement in at least part of the well so as to enable axial movement of the plunger relative to the well along a longitudinal axis of the plunger and rotational movement of the plunger about the longitudinal axis; an array of magnets (34a-34d/36a-36d) associated with the plunger (Fig.2); a first set of coils 42/44 (Fig.2) arranged to, when energized, apply an electric field that interacts with the array of magnets and provides an axial force to drive the plunger element in a linear mode (c.3, line 32); a second set of coils 50a-50h (Fig.2) arranged to, when energized, apply an electric field that interacts with the array of magnets and provides a tangential force to drive the plunger element in a rotational mode (c.3, line 47); and an integrated control system 66 which selectively energizes the first and second sets of coils to effect movement of the plunger in at least one of the linear and rotational modes.

Sudo does not have a network interface operative to receive control information via an associated network. Neither does Sudo teach an amplifier, per se.

Spinner teaches a distributed intelligence control system for controlling plural actuators 26 (Fig.2) and respective controllers 30 connected by connections 32 with a network bus 24 and gateway or "network interface" 22 (Fig.1). The network interface interprets messages from the supervisory control system (computer) 20 and converts and distributes this information to the actuator controllers. The network interface also converts and transmits information originating from the actuator, e.g., position and status, to the control system (c.4, lines 23-30). Spinner's control system selectively energizes the coils to effect desired



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movement of the plunger based on the control information received via the network interface (c.7, line 9-c.8, line 34).

Gerard teaches a linear motor and servo loop drive circuit (Fig. 1) including an amplifier 40 which supplies current to the coil 28 (c.3, lines 40-41).

It would have been obvious to one of ordinary skill at the time of the invention to modify Sudo and provide a network interface per Spinner since this would have been desirable to control the actuators, and to further include an amplifier in the drive control per Gerard since amplifiers would have been desirable to supply current to the coils.

Regarding the remaining claims, see the discussion in relevant sections of paragraphs 4 and 5 above.

*Conclusion*

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mizuno et al. teaches a network interface for controlling actuators.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 305-7063. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are 305-1341 for regular communications and 305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.



Burton S. Mullins  
Primary Examiner  
Art Unit 2834

bsm  
May 21, 2002